

Helping to Make Housing Affordable Through Energy Efficiency

by Jim Cavallo

Jim Cavallo is the manager of the Existing Buildings Efficiency Research Program at Argonne National Laboratory.

Recently, a director of a community-based organization told me about a woman in his community who was working with a financial counselor in an attempt to put her finances in order. Her difficulties had begun during the past winter when she was repeatedly forced to choose between paying her rent or paying her natural gas bill.

This is not an unusual dilemma. During Chicago winters, many families can find their budgets destroyed as their heating bills soar. A natural gas bill of \$35 or \$40 per month during the late spring, summer, and early fall can grow to over \$300 during the harsh winter months.

The woman is stuck with paying off the bills that had accumulated over the past winter. But she was at least lucky to be telling her story to a member of this particular community group, because it has been participating in several energy conservation programs sponsored by the Illinois Department of Commerce and Community Affairs, the U.S. Department of Energy, and Argonne National Laboratory. My friend is currently working with this woman to identify low cost measures to reduce her energy bills during the coming winter, as well as ways to finance those measures.

Energy efficiency can play an important role in reducing the costs of operating apartments or houses. For low income homeowners, when high heating bills threaten to compete with their mortgage pay-

ments, energy efficiency can play a significant role in their ability to sustain their mortgage. For instance, a modest 1200 square foot house can often cost a low income family over \$750 per year for space heating (that's natural gas costs minus service charges and the cost of gas for cooking, water heating, and other services). By contrast, the Affordable Energy Home Center, a house developed by Bethel New Life, ComEd, Argonne Labs and the city's

For low income homeowners, when high heating bills threaten to compete with their mortgage payments, energy efficiency can play a significant role in their ability to sustain their mortgage.

Department of Housing to demonstrate high levels of energy efficiency, will cost less than \$200 per year for space heating. Similar homes or apartments that achieve more moderate levels of energy efficiency will cost about \$350 per year to heat. That's a substantial savings - roughly the equivalent of one month's mortgage payment in some low income neighborhoods.

Researchers at the Department of Energy's national laboratories have been working for a number of years to make the benefits of energy efficiency available to both homeowners and apartment dwellers by monitoring energy consumption and developing new technologies. Many of the tools and techniques used by weatherization agencies and by community based energy analysts have grown out of studies of basic

building science conducted by research centers at universities and national laboratories.

Yet there is a need to bring the tools developed within the laboratory walls out into the community. To accomplish this, laboratory researchers working with state and federal energy office staff are giving direct technical assistance to community based organizations. Not only can the researcher help the community implement the innovative energy conservation measures, the researcher can adapt the technologies to serve the needs of the community by working alongside the contractors building the project.

The composite wall system developed by researchers from Argonne Labs and Oak Ridge National Lab is one such example of technical assistance working in tandem with research. The uninsulated walls of older buildings are frequently contaminated with lead based paint. When contractors address the lead poisoning hazard by applying liquid encapsulants on uninsulated walls, the expansion and contraction caused by temperature swings and the frequent presence of condensation on the walls cause the encapsulants to deteriorate within a few heating seasons.

The Argonne-Oak Ridge team developed the composite wall system as a low cost alternative to liquid encapsulants. The system consists of 1-1/2 inches of rigid insulation and 1/2 inch Fiberbond - a reinforced gypsum board with a high recycled materials content. The wall is constructed without studs that would create "thermal bridging" - compromising the insulation of the wall system. Instead the wall is hung

at the ceiling and the floor. The wall system creates a tight, well-insulated, and extremely strong interior surface to masonry walls, and it provides a permanent encasement of the lead poisoning hazard. The composite wall system has been installed at the Brooks Homes Development of the Chicago Housing Authority where it will be monitored over the coming heating season.

By bringing together lead hazard encasement with substantially increased wall insulation, we expect to conserve enough energy to pay for much, if not all, of the costs of lead hazard reduction through utility cost savings. Plus, the idea of bringing together these two processes - lead hazard reduction and energy conservation - only occurred to laboratory researchers when they were asked to confront the real life problems faced by contractors, housing officials, and community developers.

The first and most enduring effort to combine direct technical assistance by national laboratory researchers with a community based organization was brought about serendipitously when Mary Nelson, President of Bethel New Life, found herself sitting next to Harvey Drucker, Argonne's Associate Laboratory Director for Energy and Environment Sciences, at an annual United Way campaign. One talked about a community's need for housing, jobs, and business; the other spoke of technologies developed at national labs that might be of use to urban communities. They decided to form a partnership to probe how Department of Energy tools, techniques, and technologies developed at national laboratories can create



The Affordable Energy Home Center demonstrates high levels of energy efficiency in modestly priced housing. It is a part of Bethel's Parkside Development -- one of the focused area developments in the Chicago Partners in the American Dream.

"Not only can the researcher help the community implement the innovative energy conservation measures, the researcher can adapt the technologies to serve the needs of the community by working alongside the contractors building the project."

energy efficient affordable housing, livable wage jobs, and environmentally sustainable businesses in low-income communities.

The affordable housing component of the partnership initially focused on providing technical assistance in using high efficiency measures for insulation, space and water heating, air sealing, and lighting. The Laboratory is now working with Bethel and many other community based organizations in a larger partnership - the Chicago Partnership in the American Dream [see page 18]- which will develop homes for 5,000 residents of low-

income neighborhoods in six to ten focused area developments in Chicago and suburban Cook County. Again, the Laboratory will provide technical support for incorporating energy efficiency to make the homes more affordable in the long term.

Besides the work in energy efficient affordable housing, laboratory staff have collaborated with Bethel on the use of recycled materials, lead-based paint abatement, and the characterization of "brownfield sites" -

former industrial properties that are often contaminated by hazardous wastes.

Since Argonne and Bethel initiated their partnership, the Department of Energy has created its Partnership for Affordable Housing program to improve the energy efficiency and affordability of public and privately owned housing throughout the nation.

The program seeks to establish voluntary collaborations with housing authorities, utilities, community developers, and housing managers to meet needs defined by local housing providers. These partnerships are designed to help communities build lasting capacities for technical analysis, financial management, and project management, and to apply proven and innovative technologies and practices that save energy.

The goals of the Department of Energy's Partnership for Affordable Housing are (1) to incorporate energy and resource efficiency in the retrofit and construction of over 1 million residential units by the end of the year 2000, (2) to promote a

continued on page 13

the corner store. Although she is debating whether or not it makes sense to proceed to closing, Callie Cleveland harbors a desire to stay: "I love my place. I'd do anything in the world to keep it." Developing a comprehensive community plan in partnership with other organizations and residents in the community seems essential to fostering better communities where families thrive.

Ironically, once a neighborhood begins to improve, homeowners face higher property taxes and higher monthly payments as a result, making their homes no longer affordable. In fact, property taxes rose so dramatically in Uptown that condo owners at Kenmore-Habitat Condo Association were asked to put an additional \$60 a month in escrow. Their outcry over the tax increase and frustration over the cumbersome appeals process, which have been summarized in a separate UHFH study, became a catalyst for the current property tax relief initiatives being coordinated by the Chicago Rehab Network. Finding ways to provide property tax relief to ensure neighborhood stability is another important issue for communities to address - and one that calls for the involvement of all concerned with sustaining affordable housing.

Are condos a viable, affordable homeownership alternative for low income families? More specifically, does it make sense for developers to promote condo associations comprised of low income buyers as UHFH does? Admittedly, UHFH's homebuyer program is special, and many developers do not have the luxury of providing services like 0% interest, mortgage deferment, and property management.

And yet, affordable housing developers should definitely give this form of community-minded ownership serious consideration. They should also understand that, in the words of Carol Garvin of Kenmore-Habitat Condo Association, successful condo development has to be a "two-way street" between the

developer and the buyers. For developer, this means added costs to address buyer-needs that go well beyond acquisition and construction. Other developer considerations, including legal requirements, are discussed in more detail in the condo study.

With creative financing and government subsidies, it is possible to develop condos in Chicago neighborhoods that low income families can afford. In the fall of '95, DOH's "New Homes for Chicago" moneys were made available for newly constructed condos - allowing a discount of up to \$15,000 per unit off the sales price. Developers and government agencies should be encouraged to make CDBG dollars available for rehabbed condos as well.

"...in the words of Carol Garvin of Kenmore-Habitat Condo Association, successful condo development has to be a 'two-way street' between the developer and the buyers."

Other condo specific programs and partnerships likewise need to be established. Lenders and developers should evaluate underwriting criteria to serve the low income condo buyer more effectively; developers and housing agencies should pool resources so condo owners have somewhere to turn for technical assistance and legal counsel; and a network for reliable property management services should be created. For many low income condo pioneers, buying a condo provides an opportunity to buy real property in Chicago. James Larmie, a Cornerstone Condo owner, exuberantly expressed his family's happiness after finally going to closing following a lengthy delay while UHFH finalized the financing and prospective unit owners worked out the kinks in their condo association: "It's worth it!"

Energy, continued from page 5

comprehensive approach to energy and resource efficient design, construction, and operation of housing, and (3) to help meet national environmental goals to decrease emissions of greenhouse gases.

The partnership will meet these goals by providing housing designs and specifications, offering financing and performance contracting guidance, giving training on the use of software simulation tools, assisting with monitoring and verification, and providing training to residents and agency staff.

The Department of Energy partnership program does not form exclusive relationships. Instead, developers and community groups are encouraged to take advantage of opportunities to capture additional benefits. For example, a number of communities made use of the Illinois Department of Commerce and Community Affairs' Energy Efficient Affordable Housing Program. This program provides non-profits with grants of up to \$2,000 per unit if their housing (rehab or new) includes specified energy-efficient building measures.

Since the initiation of the Department of Energy's partnership program, over 30 partnerships have been formed in 11 cities. More activity has occurred in Chicago than in other parts of the nation - perhaps because the Department of Energy's concept of partnership among national labs working with community groups developed here first.

To learn more about the opportunities for making housing more affordable through energy efficiency and the Partnership for Affordable Housing, stop by the Affordable Energy Home Center at 230 N. Hamlin in West Garfield Park, or by call Trinetta Britt at Bethel New Life, (773) 826-5540.